Supporting Information

Optimizing the gradient of electric field distribution and inhibiting charge injection in multilayer dielectric films for high capacitive performance

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Experimental

Materials

P(VDF-HFP) powders were purchased from Poly *K*. $Ni(NO_3)_2 \cdot 6H_2O$ (99 %) powders, 1,4-benzenedicarboxylic acid (1,4-H_2BDC 99 %), N, N-dimethylformamide (DMF, 99.5 %) and acetonitrile (C_2H_3N, 99.9 %) were purchased from Shanghai Maclean Biochemical Co.

Characterization

The crystal structure of the composite materials was obtained by X-Ray Diffraction (XRD) on a D8 Advance X-ray diffractometer. The dielectric properties of all samples were measured by an LCR (TH 2838A, Changzhou Tonghui Electronics Co., Ltd., China) in the range of 10^3 to 10^6 Hz. The polarization-electric field (*P*-*E*) loops were measured by the Premier II Ferroelectric test system (Poly *K*). The fast discharge tests were performed using a CF-003 test system (Instruments Technology, China).

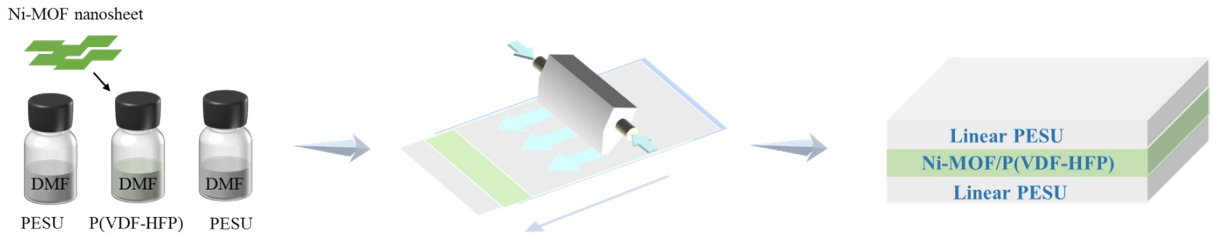

Figure S1. The preparation process of multilayer composite films.

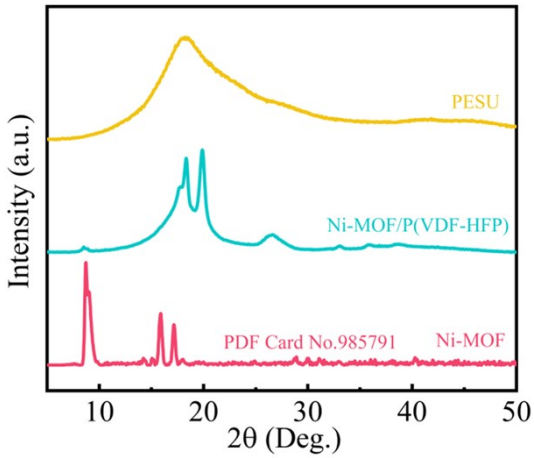

Figure S2. The XRD image of P(VDF-HFP), Ni-MOF/ P(VDF-HFP), and PESU.

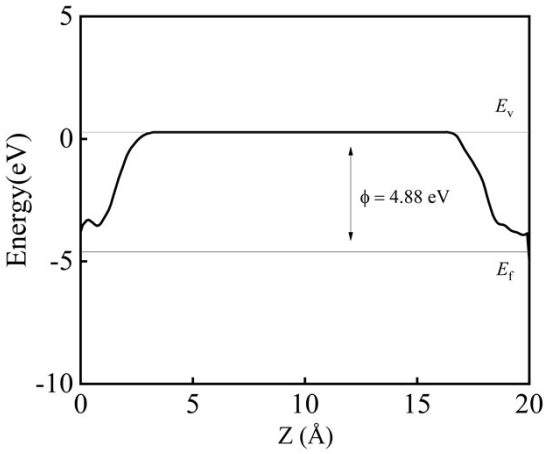

Figure S3. The work function of PESU.

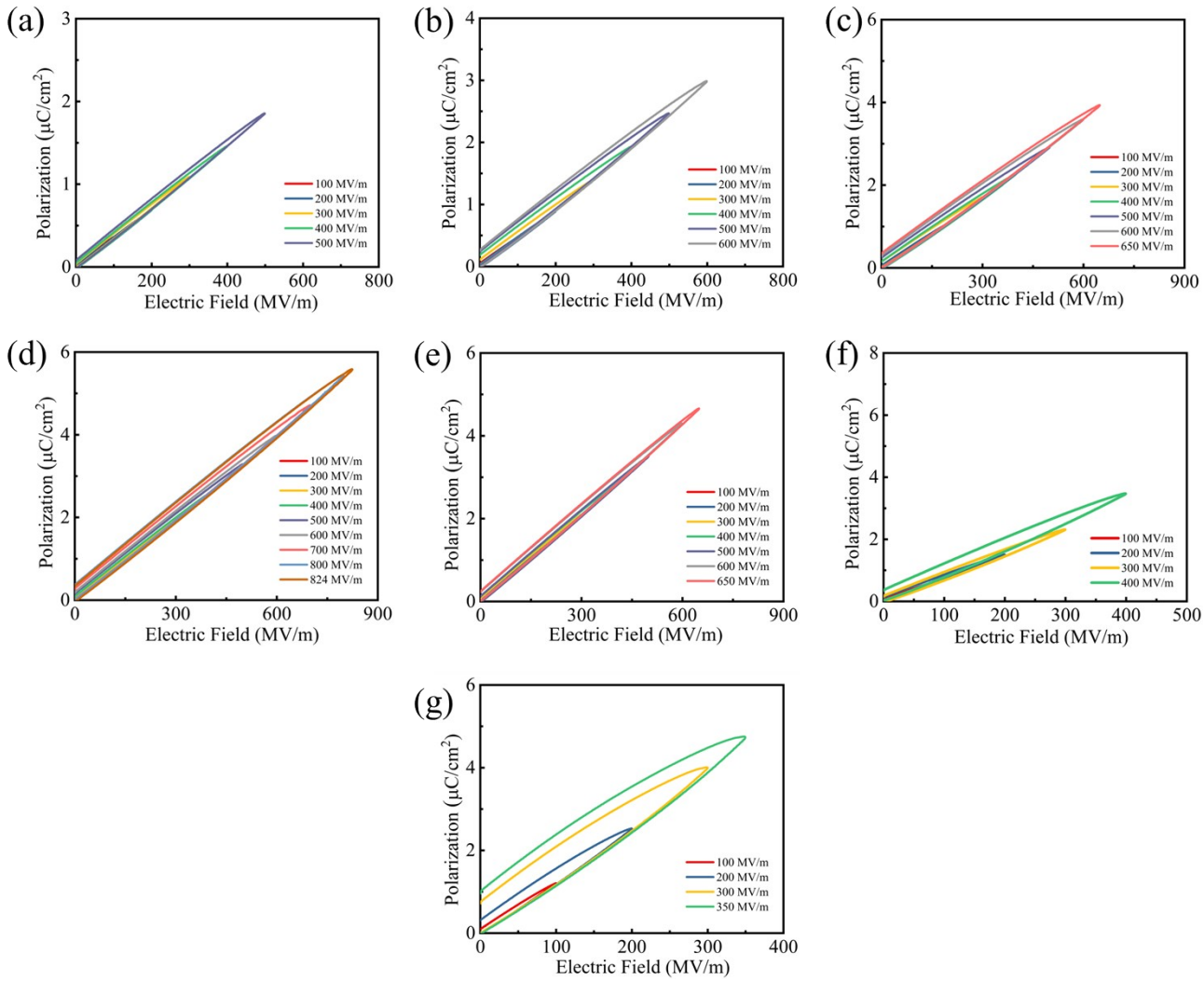

Figure S4. The *P-E* loops of PESU, PP-0, PP-1, PP-2,PP-3, PP-4, and P(VDF-HFP) under different electric fields.